



DEFENSE LOGISTICS AGENCY

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IN REPLY

REFER

DSCC-VAI (Mr. Ron Gary/(614) 692-0568

June 28, 2004

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Initial Draft of MIL-DTL-28751A; Cable, Radio Frequency, RG-373/U; Project number 6145-2376.

The initial draft for this subject document will be available for viewing and downloading from the DSCC-VAI Web site within the next 5 working days:

<http://www.dsccl.dla.mil/Programs/MilSpec/initialdrafts.asp>

Changes to this document include reference updates and reformatting, however the entire specification is offered for comment.

Concurrence or comments are required at this Center within 45 days from the date of this letter. Late comments will be held for the next coordination of this document. Comments from Military Departments must be identified as either "Essential" or "Suggested". Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians, as applicable, in sufficient time to allow for consolidation of the Department reply.

Please forward your comments or concurrence electronically to the project officer listed below. This can be in the form of a return e-mail, with or without attached text files. If an electronic response is not possible, we will accept comments via letter, facsimile, or phone call. Any further coordination concerning this document will be circulated only to firms and organizations that furnish comments or reply that they have an interest.

The point of contact for this document is Mr. Ron Gary. The preferred method of contact is via e-mail: Estel.Gary@dla.mil. Mr. Gary can also be reached at 614-692-0568/DSN 850-0568, or by facsimile 614-692-6940.

Sincerely,

Signed

RICHARD L. TAYLOR
Chief,
Interconnection Devices Team

Note: This draft dated 9 June 2004, prepared by the Defense Supply Center Columbus (DSCC-VAI) has not been approved and is subject to modification.
DO NOT USE PRIOR TO APPROVAL (6145-2376)

INCH-POUND

MIL-DTL-28751A
DRAFT
SUPERSEDING
MIL-C-28751(EC)
27 July 1970

DETAIL SPECIFICATION

CABLE, RADIO FREQUENCY RG-373/U

Inactive for new design 16 June 1997

This specification is approved for use by all Departments and Agencies of the Department of Defense

1. SCOPE

1.1 This specification covers the design and construction of a high strength, single-conductor buoyant cable.

1.2 Part or Identifying Number (PIN). The PIN consists of the "RG" number.

Example: RG-373/U

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4 or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements cited in sections 3, 4 or 5 of this specification, whether or not they are listed. The following documents of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

2.2 Government documents

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract..

FEDERAL SPECIFICATIONS

L-P-390 - Plastic Molding Material, Polyethylene, Low and Medium Density

COMMERCIAL ITEM DESCRIPTIONS

Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center Columbus, ATTN: VAI, P. O. Box 3990, Columbus OH 43218-3990 or by email to RFConnectors@dscc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at www.dodssp.daps.mil.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-C-17 - Cables, Radio Frequency; Coaxial, Dual Coaxial, Twin Conductor, and Twin Lead

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or www.dodssp.daps.mil or from the Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation or contract.

USN UNDERWATER SOUND LABORATORY (USNUSL)

USNUSL Test Gland Assembly Unit Number 00158
USNUSL Technical Memorandum Number 220-74-62

(Application for copies should be addressed to the US Navy Underwater Sound Laboratory, New London, Connecticut 06320.)

3. REQUIREMENTS

3.1 First article sample. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3

3.2 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically and advantageous life cycle costs..

3.2 Mechanical characteristics.

3.2.1 Specific gravity. The cable shall have the lowest possible overall specific gravity consistent with the requirements specified herein.

3.2.1.1 The specific gravity shall not exceed 0.85 when measured under a hydrostatic pressure of 600 pounds per square inch gage (psig) and at room temperature in fresh water. The measurement shall be made after a continuous immersion time of two hours at 600 psig. The cable sample shall not be removed from the pressure tank nor the pressure reduced until after the measurement is completed. An approved test method is contained in USL Technical Memorandum No. 220-74-62.

3.2.1.2 The specific gravity, at atmospheric pressure, in fresh water shall be not less than 0.70.

3.2.2 Cold bend. The cable shall be subjected to and satisfactorily pass the cold bend requirements of MIL-C-17.

3.2.3 Crack resistance. The cable shall be resistant to stress cracking when tested as specified in 4.5.6.

3.3 Construction.

3.3.1 Center conductor. The center conductor of the cable shall be a single strand of No. 16 AWG, Type S drawn and fully annealed copper wire in accordance with A-A-59551 and of continuous length (with no joint or splice).

3.3.2 Solid core dielectric. The solid core dielectric shall consist of Type II, Class L, Grade 7A polyethylene as specified in L-P-390 having an outside diameter of $0.180 \pm .004$ inch (4.57 ± 0.10 mm). The surface of the dielectric shall be smooth so that an O-ring of $.070 \pm .003$ inch (1.78 ± 0.08 mm) cross section and $.145 \pm .005$ inch (3.68 ± 0.13 mm) I.D. (AN6227-2) will seal on the dielectric without any leakage at any pressure from 0 to 600 psig.

3.3.3 Strength members. The strength members shall consist of at least seventeen strands of .038 inch (0.96mm) diameter fiberglass as Owens-Corning Fiberglass Co.'s ECT 75-5/3 Latex 2.0 "S" coated or equivalent, laid on the solid core with a minimum left lay of 20 inches.

3.3.4 Jacket. The jacket shall consist of two layers of black foamed polyethylene securely bonded together. The extreme diameter of the cable shall be $.650 \pm .025$ inch (16.51 ± 0.63 mm). The surface of the jacket shall be smooth so that an O-ring of 0.360 inch (9.14 mm) cross section and .620 inch (15.75 mm) I.D. (Federal Stock #H-5330-064-6585) will seal anywhere along the entire length of the cable with zero leakage at any pressure from 0 to 600 psig when applied for 2 hours. The surface of the jacket shall be of uniform hardness and free of major imperfections such as blow holes, cuts, valleys, and bruises and abrupt changes of diameter with the tolerance range. Abrupt changes are defined as variations in diameter greater than .005 inch (0.13 mm) per inch (25.4 mm) of length.

3.3.4.1 Jacket bonding. The cable shall satisfactorily meet the bonding test of 4.5.7.

3.4 Strength.

3.4.1 Breaking strength. The cable shall have a minimum breaking strength of 2000 pounds.

3.4.2 Between center conductor and solid core dielectric. The shear strength between the center conductor and the solid core dielectric shall be a minimum of 20 pounds per linear foot of cable.

3.4.3 Between strength members and jacket. The shear strength between the strength members and the jacket shall be a minimum of 100 pounds per linear foot of cable. The shear strength between each layer of jacket shall be 100 pounds per linear foot.

3.5 Length. Unless otherwise specified in the contract or order, the cable shall be provided in not less than 2000 foot nor more than 2100 foot continuous lengths (with no joints or splices).

3.6 Identification.

3.6.1 Manufacturer's identification. Manufacturer's identification shall consist of coloring the solid dielectric core in accordance with a manufacturer's identification color to be assigned by the Laboratory. Coloring of the core shall not affect the characteristics of the cable.

4. VERIFICATION

4.1 Quality control system. Test and measuring equipment and inspection facilities of sufficient accuracy, quality and quantity to permit performance of the required inspection shall be established and maintained by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment (i.e., industry standard, military standard) shall be required.

4.2 Conformance inspection. The inspection requirements specified herein are classified as follows:

- (a) First article inspection (see 4.3)
- (b) Quality conformance inspection (see 4.4)

4.2.1 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified herein (applicable test method document or applicable paragraph(s) in the specification.

4.3 First article inspection. Unless otherwise specified (see 6.1), a 300-foot sample of cable constructed in accordance with this specification shall be required for first article inspection.

4.3.1 First article test report. Unless otherwise specified, a report of the tests conducted shall be forwarded to USNUSL, New London, Connecticut 06320 with a 100-foot length taken from the 300 foot sample. The manufacturer shall not initiate production prior to receipt of approval of this report except at the manufacturers own risk.

4.4 Conformance inspection.

4.4.1 Sampling. A sample of cable shall be selected from each reel for the examination and tests of 4.4.2, 4.5.4. Samples of sufficient length shall be selected from every 40,000 feet of cable for the tests of 4.5.2, 4.5.3, 4.5.5 and 4.5.6.

4.4.2 Visual and dimensional examination. The samples selected in accordance with 4.3.1 shall be examined to verify that the design, construction, physical dimensions, and workmanship are in accordance with this specification.

4.4.2.1 Each reel of cable shall be supplied with diameter recordings specified in 4.4.1.

4.5 Test procedures.

4.5.1 Dimensions and out-of-round. The overall diameter of the outer jacket shall be measured. The cable making equipment shall be fitted with electronic or mechanical measuring device(s) to produce graphic records of the cable produced. Two recordings shall be made as nearly simultaneously as possible of each diameter, 90 degrees apart, and at a point in manufacturing where further dimensional changes such as cooling, tension, and so forth will not occur. The recordings shall be permanent and reproducible by a common commercial process. The recording accuracy shall be no less than 5 percent of the tolerance being measured, and any portion of the recording of the O.D. shall be identifiable to within ± 2 feet of the cable being measured and not less than 1/20 of an inch of paper per each 1 foot of cable being monitored. Each recording shall be identified with the reel of cable being monitored. The beginning of the cable length and end of the cable run shall be indicated on the recordings.

4.5.1.1 Calibration. The zero position on the graph and an indication of which side of zero is over and which side is under the nominal cable diameters shall be required, and an indication of specific values in thousandths of an inch shall be made on the recording with regard to the dielectric and outer jacket outside diameters.

4.5.2 Breaking strength. The breaking strength of the cable shall be determined by means of a power-driven tensile machine. The rate of travel of the power actuated grip shall be adjusted to move at a rate of 12 ± 2 feet per minute. Distance between grips shall be five (5) feet prior to the application of the load. A reduction of the jacket diameter to .580 inch (14.73 mm) shall be considered a failure.

4.5.3 Shear strength. A suitable device such as Kellems grip shall be used to facilitate measurement of the shear strength between strength members and jacket.

4.5.4 Specific gravity. The specific gravity shall be measured under a hydrostatic pressure of 600 pounds per square inch gage (psig) at room temperature in fresh water. The measurement shall be made after a continuous immersion of two hours. The cable sample shall not be removed from the pressure tank nor the pressure reduced until after the measurement is completed.

4.5.5 Cold bend. The cable shall be subjected to the cold bend test specified in MIL-C-17.

4.5.6 Crack resistance. The cable shall be tightly wrapped around a mandrel 3 inches in diameter continuously for 24 hours to determine conformance with 3.2.3.

4.5.7 Jacket bonding. A knife cut .0635 inch (1.587 mm) of an inch deep shall be made across one side of the cable. The cable shall be bent back on itself with the cut on the outside of the bend. There shall be no indication of separation of the inner and outer jacket.

4.6 Inspection conditions. Unless otherwise specified herein, all inspection shall be made at room ambient temperature, pressure and humidity.

4.7 Inspection of preparation for delivery. Inspection shall be conducted to insure conformance with the requirements of Section 5 of this specification.

5. PACKAGING

5.1 Packaging (see 6.2) For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD or in house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military service or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Length if other than specified in 3.5.
- (c) Packaging requirements (see 5.1).

6.2 First article. Invitations for bids should provide that the Government reserves the right to waive the requirement for first article samples as to those bidders offering a product which has been previously procured or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending procurement.

6.3 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. Table I lists the Environmental Protection Agency (EPA) top seventeen hazardous materials targeted for major usage reduction. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see 3.6).

TABLE I. EPA top seventeen hazardous materials.

Benzene	Dichloromethane	Tetrachloroethylene
Cadmium and Compounds	Lead and Compounds	Toluene
Carbon Tetrachloride	Mercury and Compounds	1,1,1 - Trichloroethane
Chloroform	Methyl Ethyl Ketone	Trichloroethylene
Chromium and Compounds	Methyl Isobutyl Ketone	Xylenes
Cyanide and Compounds	Nickel and Compounds	

6.4 Term (key word) listing.

Polyethylene
Copper

6.5 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

CONCLUDING MATERIAL

Custodians:
Navy – EC
DLA - CC

Preparing activity:
DLA - CC

(Project 6145-2376-000)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://www.dodssp.daps.mil>.